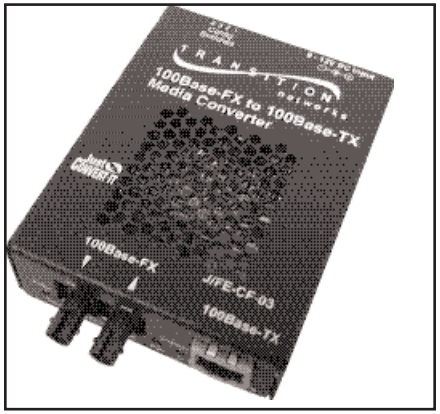
TRANSITION NETWORKS



USER'S GUIDE

J/FE-CF-03

Stand-Alone media converter

- **Fast Ethernet™**
- **Copper to Fiber**
- **100Base-TX to 100Base-FX**

Transition Networks J/FE-CF-03 Fast Ethernet™ media converter connects 100 Mb/s twisted-pair copper cable to a duplex 100 Mb/s fiber-optic cable.

Use the J/FE-CF-03 series media converter *(or up to two media converters in series)* to extend over fiber, the distance between two 100BASE-TX devices *(hub, switch, workstation, etc.).*

Part Number	Port One - Copper	Port Two - Duplex Fiber-Optic
J/FE-CF-03	RJ-45, 100Base-TX 100 m *(328 ft)**	ST, 100Base-FX, 1300 nm multimode 2 km *(1.2 miles)**
J/FE-CF-03(SC)	RJ-45, 100Base-TX 100 m *(328 ft)**	SC , 100Base-FX, 1300 nm multimode 2 km *(1.2 miles)**
J/FE-CF-03(SM)	RJ-45, 100Base-TX 100 m *(328 ft)**	SC, 100Base-FX, 1300 nm singlemode 20 km *(12.4 miles)**
J/FE-CF-03(LH)	RJ-45, 100Base-TX 100 m *(328 ft)**	SC, 100Base-FX, 1300 nm singlemode 40 km *(24.9 miles)**

Single Fiber Optic *(install as a pair)*

Part Number	Port One - Copper	Port Two - Duplex Fiber-Optic
J/FE-CF-03-100	RJ-45, 100Base-TX 100 m *(328 ft)**	SC, 1310 mn TX/1550 nm RX, 20 km *(12.4 miles)**
J/FE-CF-03-101	RJ-45, 100Base-TX 100 m *(328 ft)**	SC, 1550 mn TX/1310 nm RX, 20 km *(12.4 miles)**

Note: Install the J/FE-CF-03-100 and the J/FE-CF-03-101 in the same network as local and remote peers.

*Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network installation.

Options Accessories *(sold separately)*

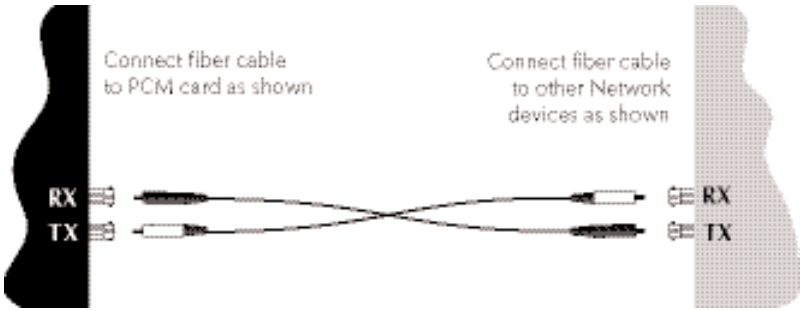
Part Number	Description
WMBS	Optional Wall Mount Brackets Length: 3.2 in. *(81 mm)*, Fits converter length: 3.9 in. *(99 mm)*
SPS-1872-SA	Optional External Power Supply; 18-72VDC Stand-Alone Wide-Input; Output: 12.6VDC, 1.0 A
SPS-1872-CC	Optional External Power Supply; 18-72VDC Piggy-Back Wide-Input; Output: 12.6VDC, 1.0 A

Installation

Installing the Cable

Fiber

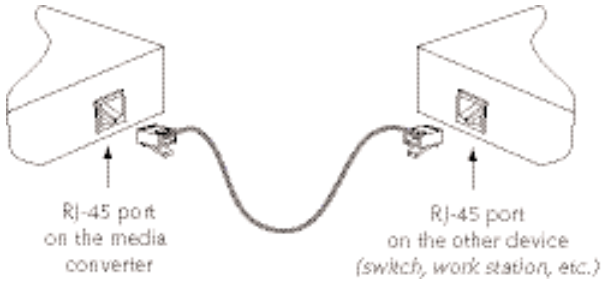
1. Locate or build 100Base-FX compliant fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to J/FE-CF-03 media converter as described:
   - Connect the male TX cable connector the female TX port.
   - Connect the male RX cable connector to the female RX port.
3. Connect the fiber cables to the other device *(another media converter, hub, etc.)* as described:
   - Connect the male TX cable connector the female RX port.
   - Connect the male RX cable connector to the female TX port.



Installation -- Continued

Copper

1. Locate or build 100Base-TX compliant copper cables with male, RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port on the J/FE-CF-03 media converter.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port on the other device *(switch, workstation, etc.)*.

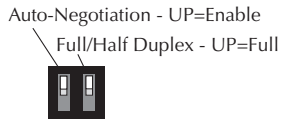


Set the Two-Position Switch

A two-position switch *(located on the back of the media monverter)* allows selection of Auto-Negotiation and Full- or Half-Duplex. Use a small, flat-blade screwdriver *(or a similar device)* to set the switch according to the site requirements see the drawing below.

Auto-Negotiation:

UP	Enable Auto-Negotiation
DOWN	Disable Auto-Negotiation



Full/Half Duplex:

UP	Full Duplex -- Advertises 100 Mb/s full-duplex only during Auto-Negotiation.
DOWN	Half Duplex -- Used primarily when connecting to a hub. Operates at 100 Mb/s in duplex mode of the attached device.

Installation -- Continued

Power the media converter

AC power:

1. Install the power adapter cord to the back of the media converter.
2. Connect the power adapter plug to AC power.
3. Verify that the media converter is powered by observing the illuminated LED power indicator light.

DC power:

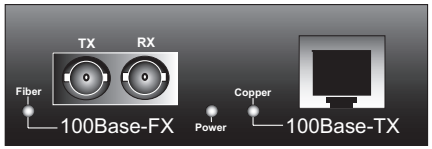
Consult the User's Guide for the Transition Networks SPS1872-xx DC External Power Supply for powering the media converter.

Operation

Using status LEDs

Use the status LEDs to monitor the media converter operation in the network.

Power	Steady LED indicates connection to external AC power.
Fiber	Steady LED indicates fiber link connection.
Copper	Steady LED indicates copper link connection.



Auto-Negotiation

The Auto-Negotiation feature allows the media converter to be used with 100Base-TX ports. Using Auto-Negotiation, the media converter brings up the copper links in the highest speed and mode possible for all attached network devices.

Full-Duplex network

In a full-duplex network, maximum cable lengths are determined by the type of cables that are used. See page 1 *(front cover)* for the cable specifications for the different J/FE-CF-03 models. *(The 512-Bit Rule does not apply in a full-duplex network.)*

Half-Duplex network *(512-Bit Rule)*

In a half-duplex network, the maximum cable lengths are determined by the round trip delay limitations of each Fast Ethernet™ collision domain. *(A collision domain is the longest path between any two terminal devices, e.g. a terminal, switch, or router.)*

The 512-Bit Rule determines the maximum length of cable permitted by calculating the round-trip delay in bit-times (BT) of a particular collision domain. If the result is less than or equal to 512 BT, the path is good.

For more information on the 512-Bit Rule, see the white paper titled "Collision Domains" on the Transition Networks website at:

http://www.transition.com/learning/whitepapers/colldom_wp.htm

Cable Specifications

The physical characteristics must meet or exceed IEEE 802.3™ specifications.

Fiber cable

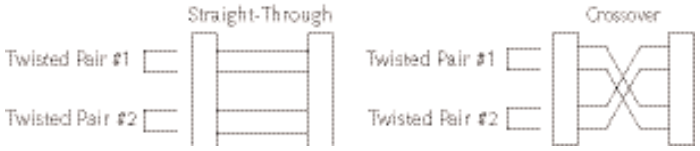
Bit Error Rate:	<10-9	
Singlemode fiber *(recommended)*:	9 µm	
Multimode fiber *(recommended)*:	62.5/125 µm	
Multimode fiber *(optional)*:	100/140, 85/140, 50/125 µm	
J/FE-CF-03	1300 nm multimode	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Link Budget:	11.0 dB	
J/FE-CF-03(SC)	1300 nm multimode	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Link Budget:	11.0 dB	
J/FE-CF-03(SM) & (LH)	1300 nm singlemode	
Fiber-optic Transmitter Power:	min: -15.0 dBm	max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -31.0 dBm	max: -8.0 dBm
Link Budget:	16.0 dB	
J/FE-CF-03-100	1310 nm (TX)/1550 nm (RX) simplex	
J/FE-CF-03-101	1550 nm (TX)/1310 nm (RX) simplex	
Fiber-optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	

Copper cable

Category 5:

Gauge:	24 to 22 AWG
Attenuation:	22.0 dB/100m @ 100 MHz
Maximum Cable Distance:	100 meters

- Straight-Through or Crossover cable may be used.
- Shielded Twisted-Pair (STP) or Unshielded Twisted-Pair (UTP) may be used.
- Pins 1&2 and 3&6 are the two active pairs in an Ethernet™ network .
- Use only dedicated wire pairs for the active pins:
  (e.g., blue/white & white/blue, orange/white & white/orange, etc.)
- Do not use flat or silver satin wire.



Technical Specifications

For use with Transition Networks Model J/FE-CF-03 or equivalent

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

Standards:	IEEE 802.3™
Data Rate:	100 Mb/s
Case Dimensions:	3.9" x 3.0" x 1.0" *(100mm x 76mm x 25mm)*
Shipping Weight:	2 pounds *(0.9 kilograms)*
Power Consumption:	2.8 watts, 200 mA @ 13.9 VDC
Power Supply DC Output:	12 VDC, 0.4 A *(minimum)* minimum output regulation: 5% Connector: 2.1mm barrel, center pin positive
MTBF*	48,135 hours *(MIL217F2 V5.0) (MIL-HDBK-217F)* 128,553 hours *(Bellcore7 V5.0)*
Environment:	
Tmra**:	0 to 60°C *(32 to 140°F)*
Storage Temp:	-20 to 85°C *(-4 to 185°F)*
Humidity:	5-95%, non-condensing
Altitude:	0-10,000 feet
Warranty:	Lifetime

**Manufacturer's rated ambient temperature.

WARNING: Visible and invisible laser radiation when open. Do not stare into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

WARNING: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION: Copper based media ports, e.g., Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intra-building *(inside plant)* link segments that are not subject to lightening transients or power faults. Copper based media ports, e.g., Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are NOT to be connected to inter-building *(outside plant)* link segments that are subject to lightening transients or power faults. Failure to observe this caution could result in damage to equipment.

*MTBF is estimated using the predictability method. This method is based on MIL-217F at 25°C ambient temperature, typical enclosure heat rise of 10°C, and nominal operating conditions and parameters. Installation and configuration specific MTBF estimates are available upon request. Contact Technical Support.

Troubleshooting

If the media converter fails, isolate and correct the failure by determining the answers to the following questions and then taking the indicated action:

1. Is the Power LED on the media converter illuminated?

   NO
   - Is the power adapter the proper type of voltage and cycle frequency for the AC outlet?
   - Is the power adapter properly installed in the media converter and in the outlet?
   - Contact Technical Support at (800) 260-1312.

   YES
   - Proceed to step 2.

2. Is the Copper LED illuminated?

   NO
   - Check the copper cable for proper connection.
   - Contact Technical Support at (800) 260-1312.

   YES
   - Proceed to step 3.

3. Is the Fiber LED illuminated?

   NO
   - Check the fiber cables for proper connection.
   - Verify that the TX and RX cables on the media converter are connected to the RX and TX ports, respectively, on the other 100BASE-FX device.
   - Contact Technical Support at (800) 260-1312.

   YES
   - Contact Technical Support at (800) 260-1312.

Contact Us

Technical support

Technical support is available 24 hours a day.
US and Canada: 1-800-260-1312
International: 00-1-952-941-7600

Transition NOW

Chat live via the Web with Transition Networks Technical Support.
Log onto www.transition.com and click the Transition Now link.

Web-Based seminars

Transition Networks provides seminars via live web-based training.
Log onto www.transition.com and click the Learning Center link.

E-Mail

Ask a question anytime by sending an e-mail to our technical support staff.
techsupport@transition.com

Address

Transition Networks
6475 City West Parkway
Minneapolis, MN 55344, U.S.A.
telephone: 952-941-7600
toll free: 800-526-9267
fax: 952-941-2322

TRANSITION NETWORKS

Declaration Of Conformity

Name of Mfg:	Transition Networks 6475 City West Parkway, Minneapolis MN 55344 U.S.A.
Model:	J/FE-CF-03 Series Media Converters
Part Number(s):	J/FE-CF-03, J/FE-CF-03(SC), J/FE-CF-03(SM), J/FE-CF-03(SH), J/FE-CF-03(LH), J/FE-CF-03-100, J/FE-CF-03-101
Regulation:	EMC Directive 89/336/EEC

Purpose: To declare that the J/FE-CF-03 to which this declaration refers is in conformity with the following standards.

EN 55022:1994; EN 55024:1998; FCC Part 15 Class A; EN 60950 A4:1997; UL 1950 (Power Supply); 21 CFR subpart J

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Stephen Anderson, Vice-President of Engineering — July 18, 2006 Date

Compliance Information

Power Supply is UL Listed
Power Supply is C-UL Listed (Canada)
CISPR22/EN55022 Class A + EN55204
CE Mark

FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.
Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung !

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in weichen Fällen der Benutzer für entsprechende Gegenmaßnahmen werantwortlich ist.

Attention !

Ceci est un produit de Classe A. Dans un environment domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilsateur de prende les measures spécifiques appropriées.

In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.

CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentlickes Telekommunikationsnetz in den EG-Mitgliedstaaten verstösst gegen die jeweligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.